will drive a cam in the vertical directions. The switch and cam are arranged so that when the valve is closed to fluid the switch will also be closed. This feedback signal can be used by the controlling electronics, if necessary to sense the closed position. Alternatively, a potentiometer or other encoder may be so attached to provide continuous feedback to the controller.

After the heading "DETAILS OF INVENTION" and before the paragraph beginning at column 4, line 14, please insert the following:

Throttling valve 20 generally includes valve body 22, flexible diaphragm structure 24, and drive assembly 26. Valve body 22 has inlet passage 28 and outlet passage 30 fluidly connected through fluid cavity 32. Inlet passage 28 and outlet passage 30 have threaded portions 34, 36, respectively, for connecting with fluid piping (not depicted). Valve body 22 may be made from a solid block of PTFE or other chemically resistant polymer material.

Upwardly facing valve seat 38 in the form of projecting island 40 surrounds the entrance 42 to inlet passage 28 in fluid cavity 32. Projecting island 40 is generally annular and has an outer surface 44 with a top portion 46 and an outer peripheral surface portion 48.

Flexible diaphragm structure 24 generally includes primary diaphragm 50, secondary diaphragm 52, valve portion 54, and threaded stem 56. Primary diaphragm 50 has a central portion 58, a thin walled portion 60, and a thicker shoulder portion 62. Secondary diaphragm 52 has a central portion 64, which fits over central portion 58 of primary diaphragm 50, a thin walled portion 66, and a thicker shoulder portion 68. Primary diaphragm 50 and secondary diaphragm 52 mate at shoulder portions 62, 68. Thin walled portions 60 and 66 are spaced apart, defining internal volume chamber 70 in flexible diaphragm structure 24. Weep hole 71 may be provided, extending from internal volume chamber 70 through valve body 22 to the atmosphere.

Valve portion 54 is defined in bottom surface 72 of flexible diaphragm structure 24, and generally includes an annulus 74 defining a recess 76. Recess 76 has inner surface 78, which includes a flat portion 80 and an inner peripheral surface portion 82. Recess 76 is the female form of projecting island 40 and is sized so as to snugly receive projecting island 40 therein. When projecting island 40 is received in recess 76, inner peripheral surface portion 82 confronts outer peripheral surface portion 48 of projecting island 40.

Drive assembly 26 generally includes drive housing 84, drive train 86 and operator 88. Drive housing 84 is firmly attached to valve body 22 with through bolts 90. A pair of metallic holding bars 92 are provided to carry the compression loads imposed by through bolts 90. All metallic components of the assembly are isolated from the fluid flow by considerable distances of PTFE. Primary diaphragm 50 and back up diaphragm 52 are pinched and held in place by drive housing 84. Sealing is accomplished without the need for o-rings by slightly over sizing the shoulders 62, 68, of the two diaphragms 50, 52.

Drive train 86 generally includes drive shaft 94, rotor 96, thrust bearings 98, 100, and pre-load spring 102. Drive shaft 94 threadedly connects with threaded stem 56 of flexible diaphragm structure 24, and is made from Hastelloy C22, well known for its corrosion resistance properties. Drive shaft 94 retains secondary diaphragm on threaded stem 56. Although drive shaft 94 is isolated from the process fluid by PTFE components, it can be corrosively attacked by ions leaching through the PTFE.

Rotor 96 is rotatably mounted between large diameter thrust bearing 98 and small diameter thrust bearing 100, and is rotationally fixed to drive shaft 94. Large diameter thrust bearing 98 bears the upward force exerted against valve portion 54 by the fluid flow through inlet passage 28. The upward force is generally about 105 pounds for 60 p.s.i. of fluid pressure. The rotor is provided with a pre-load biasing force in the direction opposite fluid flow by pre-

load spring 102, which may be a wavy spring. Small diameter thrust bearing 100 serves to bear the downward force exerted by pre-load spring 102.

Operator 88, which may be a stepper motor 104, mounts to drive housing 84, with through bolts 90. Upper frame member 91 connects bolts 90. Alternatively, two threaded spacers 106, 108, may be substituted for through bolts 90 for mounting the optional encoder/position switch 110 and actuating mechanism 112, 114. Stepper motor 104 is directly rotationally coupled with rotor 96 by a tab in the motor drive shaft (not depicted) which is engaged in a slot 115 formed in rotor 96. As depicted, a coupling 116 is used to attach threaded encoder shaft 118. Shaft 118 drives threaded bushing 120 and attached cam 122 in the vertical direction corresponding with the position of diaphragms 50, 52, as positioned by motor 104. The position may be adjusted so that when diaphragms 50, 52, and valve portion 54 are closed down on projecting island 40, switch 110 will be closed. Alternately, shaft 118, bushing 120, and cam 122 maybe replaced with a potentiometer (not depicted), or other suitable encoder.

In operation, stepper motor 104 drives rotor 96, which in turn rotates drive shaft 94, thereby selectively vertically positioning flexible diaphragm structure 24. Valve portion 54 moves vertically with flexible diaphragm structure 24 so that a throttling gap of varying size may be formed between outer peripheral surface 48 of projecting island 40 and inner peripheral surface 82 of valve portion 54. Stepper motor 104 may also be positioned so that projecting island 40 is fully engaged in recess 76, thereby closing off flow through the valve.

Please delete the entire paragraph beginning at column 4, line 14 and extending through column 4, line 34.

Please delete the entire paragraph beginning at column 4, line 35 and extending through column 4, line 49.